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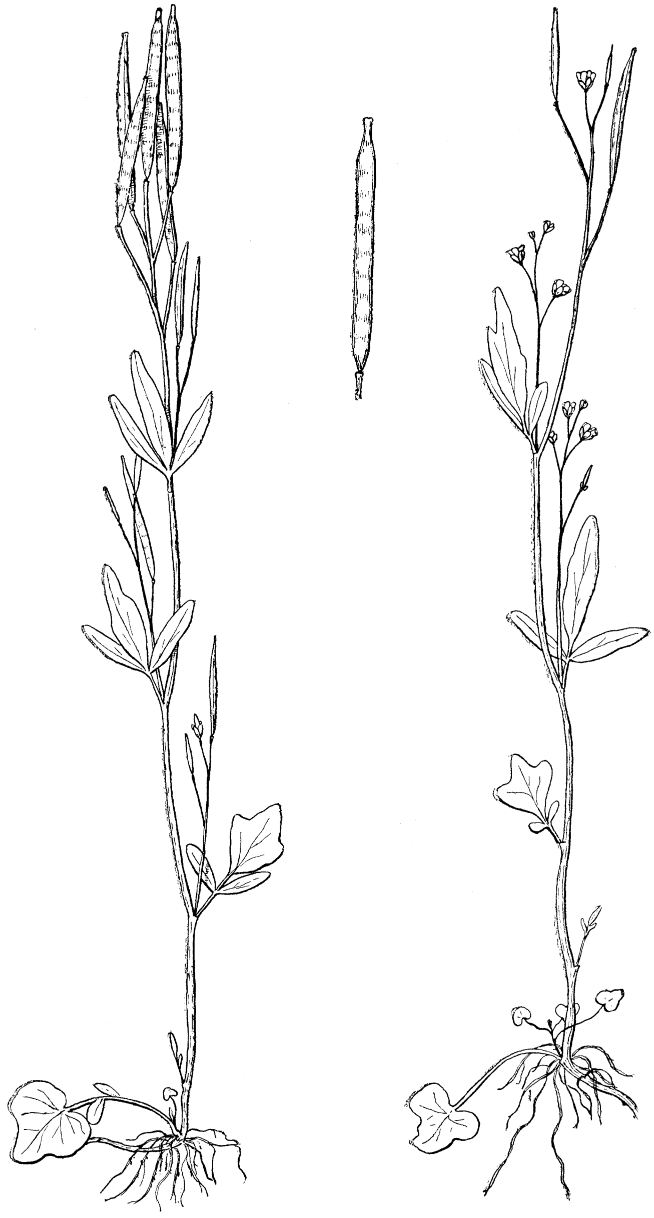
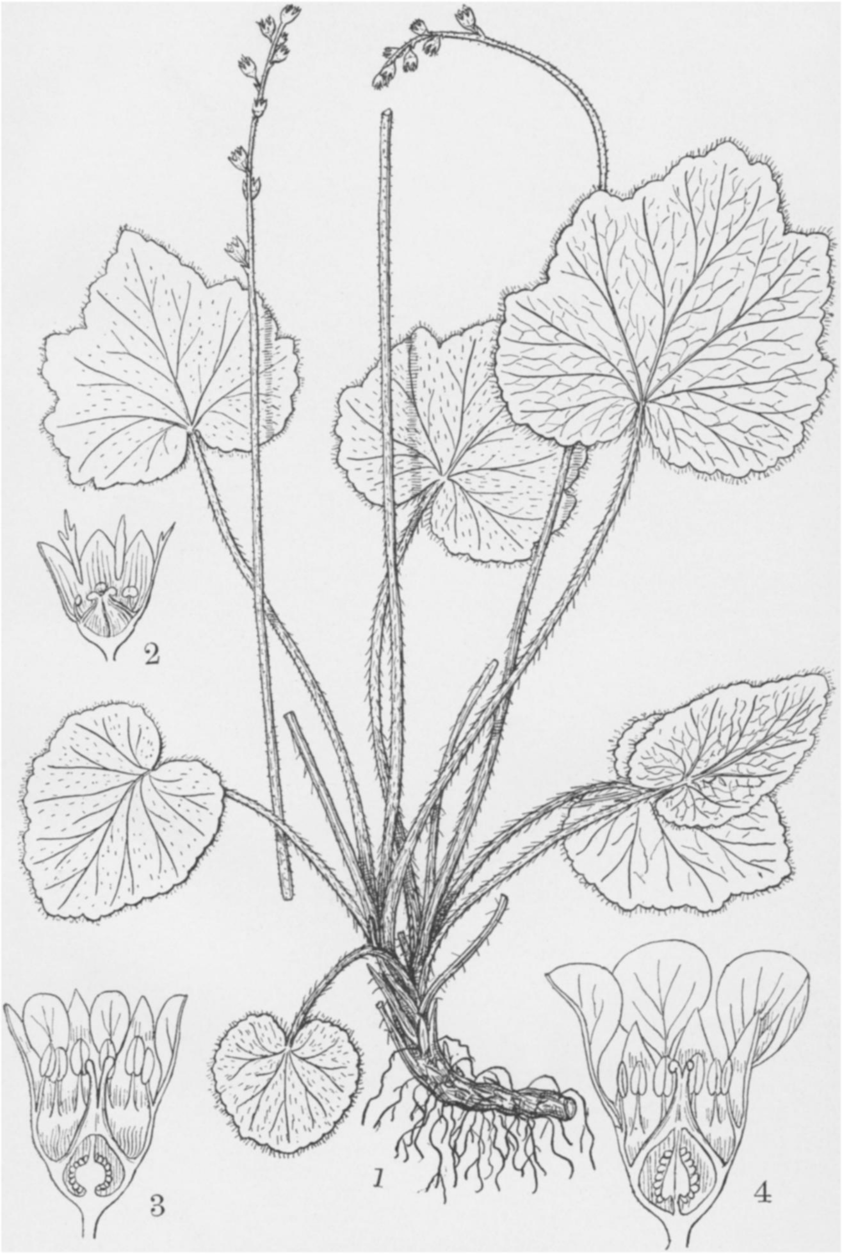
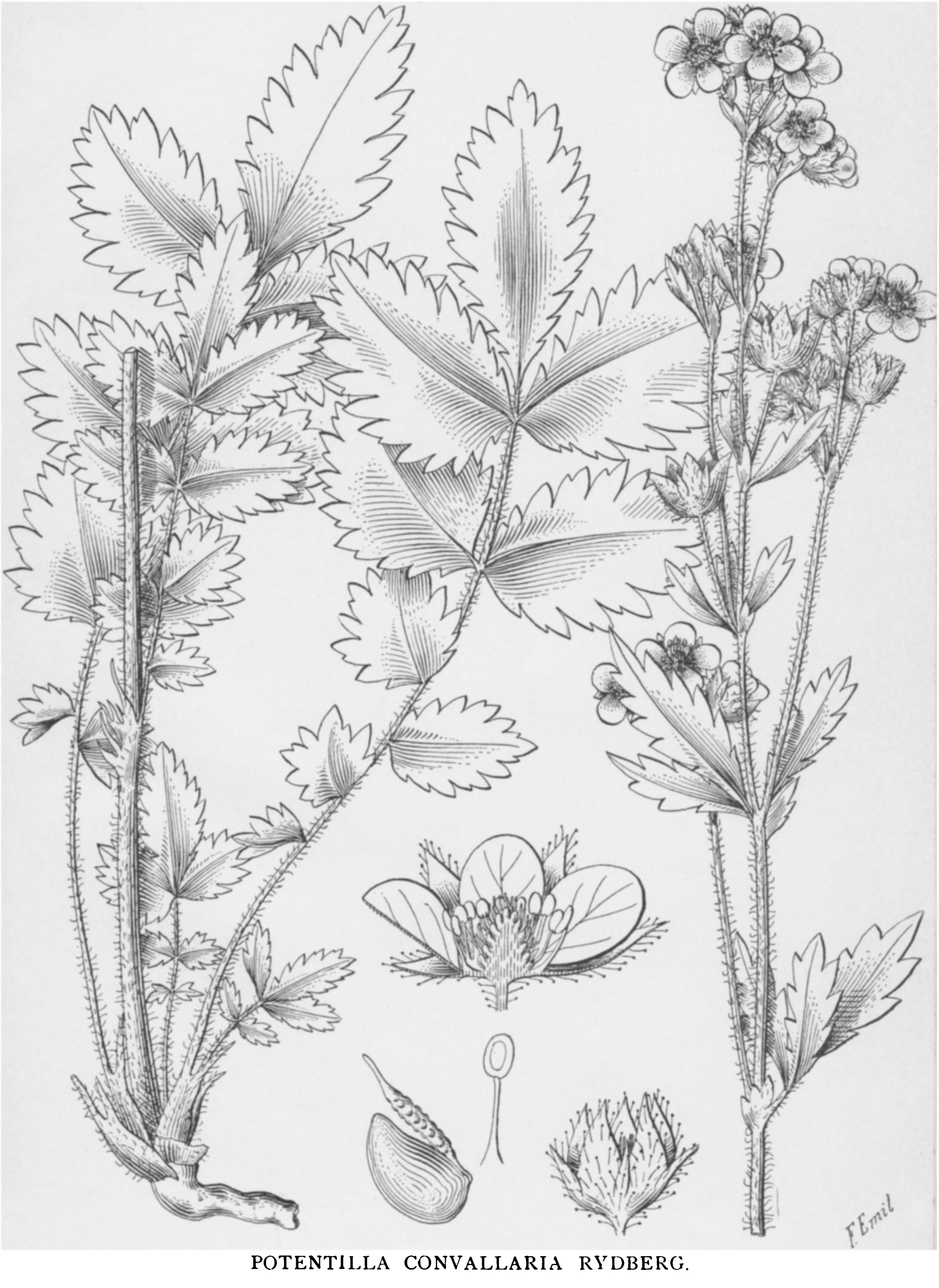


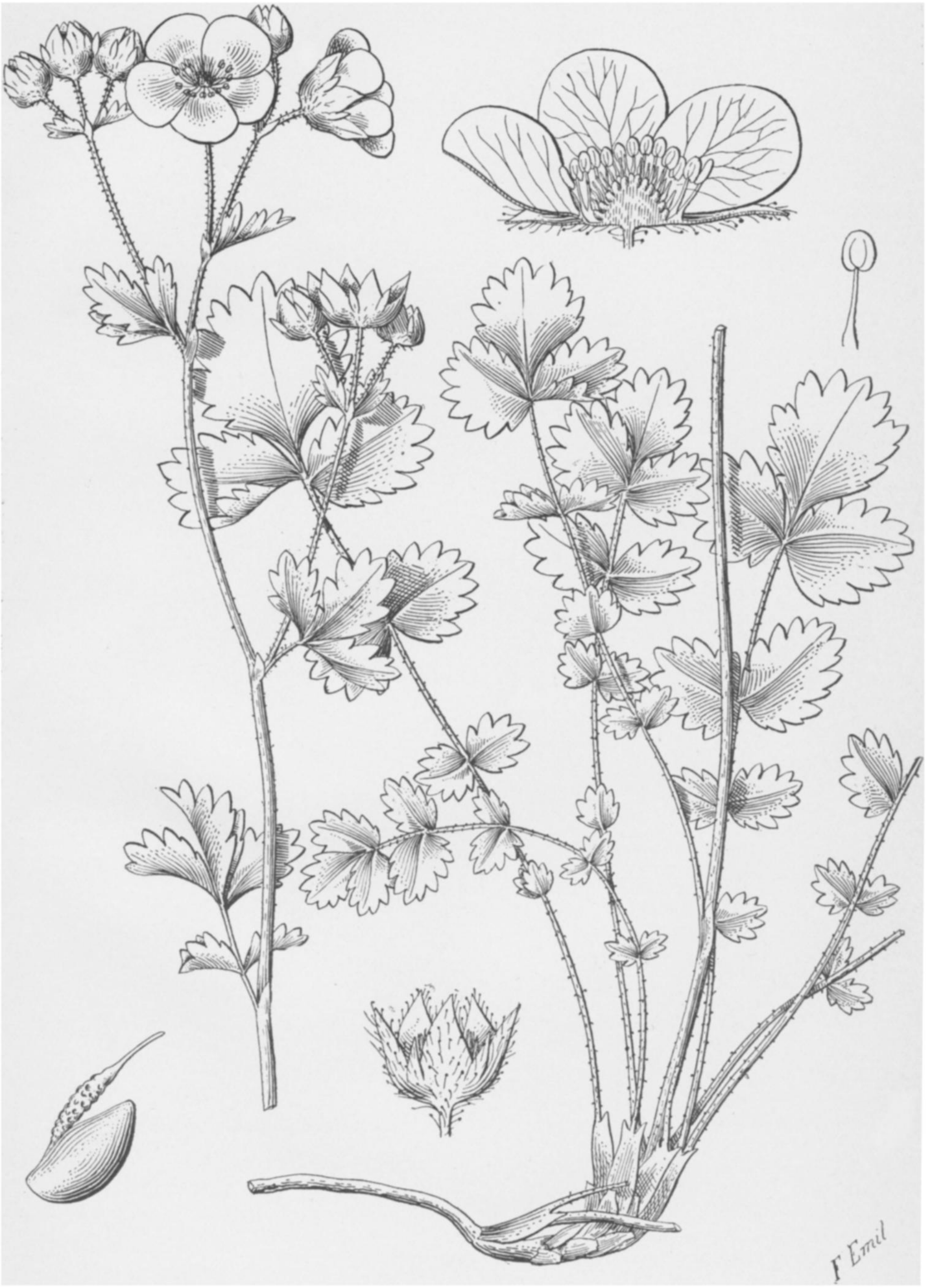
CARDAMINE UNIJUGA RYDBERG.



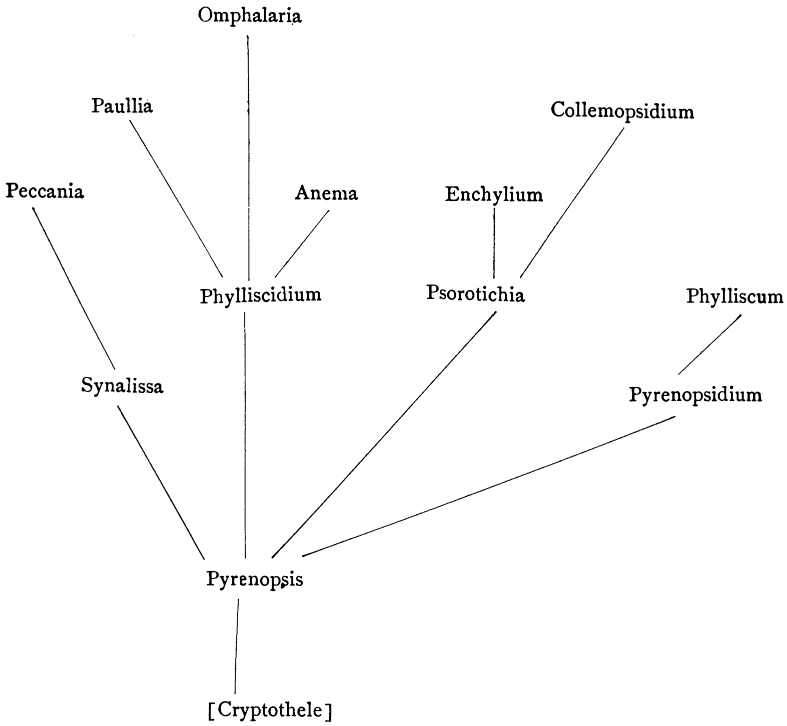
1–2 MITELLA VIOLACEA RYDBERG.
3 THEROFON HEUCHERAEFORME RYDBERG.
4 THEROFON JAMESII (TORR.) WHEELOCK.



POTENTILLA CONVALLARIA RYDBERG.



POTENTILLA PSEUDORUPESTRIS RYDBERG.



Omphalariacei

Rarieties from Montana.—II.

By P. A. Rydberg.

(Plates 304–307.)

Polygonum Austinae Greene, Bull. Cal. Acad. 2: 212. 1885.*

This little interesting *Polygonum* was collected on the side of one of the highest peaks of the Crazy Mountains, September 8, 1896, at an altitude of 8000 feet.

Polygonum Engelmannii Greene, Bull. Cal. Acad. 1: 126. 1884.

This has hitherto only been collected in the higher mountains of Colorado. It is not uncommon in central Montana at an altitude of 6000 feet or more. Cottonwood Creek, July 30, 1896,

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* This and the next have been determined by J. K. Small.

Flodman, no. 400. Sweet Grass Cañon, Crazy Mountains, September 8th, no. 399.

SILENE REPENS Patrin, in Pers. Syn. 1: 500. 1805.

This Siberian species has been collected in Montana at the following stations: Spanish Basin, July 11, 1896, Flodman, no. 412; Mystic Lake, Bozeman Cañon, July 24, 1895, Rydberg, no. 2635. As far as I can find, there is no reference in print regarding its occurrence in America. Dr. B. L. Robinson, to whom the specimens were sent for identification and who has determined it as well as the next following species, writes:

"Your specimens of *S. repens* are very interesting. I have seen specimens from Alaska, but never before from other parts of North America. I have no doubt, however, of the identity of your plants with the real Asiatic plant, having just made careful dissections of the two alongside of each other. However, the matter of distribution is not so surprising after the discovery of *Stellaria dichotoma* in Montana some years ago."

ALSINE CALYCANTHA (Ledeb.)

Arenaria calycantha Ledeb. Mem. Acad. St. Petersb. **5**: 534. 1812.

Stellaria calycantha Bong. Veg. Ins. Sitcha, 127. 1831.

This species was collected in a damp place just below a little patch of snow near the top of Yogo Baldy in the Little Belt Mountains, August 24, 1896, Flodman, no. 432.

ALSINE LONGIPES EDWARDSII R. Br.

Stellaria Edwardsii R. Br., Parry's 1st Voy. 271.

This is, I think, the first time this variety is reported from within the United States. Only a few specimens were collected, at an altitude of 8000 feet on Spanish Peaks, July 14, 1896, Flodman, no. 429.

ARENARIA SUBCONGESTA (Wats.)

Arenaria Fendleri subcongesta Wats. Bot. King's Exp. 40. 1871.

A. congesta subcongesta Wats. Bot. Cal. 1: 69. 1876.

Arenaria congesta subcongesta as generally understood, I think, contains more than one distinct type; at least, that is the case with the material in the Columbia herbarium. The form represented by Watson's original from the King Expedition and the common plant of Montana, I think, is perfectly distinct from both *A. Fendleri* and *A. congesta,* and the relationship is rather with *A. capillaris.* Depauperate specimens of *A. subcongesta* resemble strikingly *A. capillaris nardifolia.* It differs, however, in the scarious bracts and the more acute sepals, which are nearly as broad as in *A. capillaris.* It surprises me that it ever could have been made a variety of *A. Fendleri,* which has very narrowly lanceolate attenuate sepals. I do not see any reason for uniting it with *A. congesta,* which has lanceolate, decidedly carinate sepals and headlike inflorescence, while in *A. subcongesta* the sepals are ovate rather than lanceolate, are not carinate, but three-nerved, and the inflorescence is open. As stated before, it comes in every respect nearer to *A. capillaris,* but I think it has just as good right to specific rank as any of the species mentioned.

A. subcongesta is common in central and southwestern Montana. Flodman, nos. 433 to 438, Rydberg, 2642, etc.

AQUILEGIA JONESII Parry, Am. Nat. **8**: 211. 1874.

This rare little columbine was collected in fruit on a mountain top near the Neihart Pass in the Little Belt Mountains, August 10, 1896, Flodman, no. 451.

ATRAGENE TENUILOBA (Gray) Britton, Bull. Herb. Boiss. 3: 206. 1895.

Clematis alpina var. *occidentalis* subvar. *tenuiloba* A. Gray in Newton & Jenney, Rep. Geol. Black Hills, 531. 1880.

Clematis Pseudoatragene var. *subtriternata* Kuntze, Verh. Bot. Ver. Prov. Brand. **26**: 160. 1884.

This species has been reported hitherto only from the Black Hills and Colorado Mountains. In the Little Belt Mountains near Neihart Pass, at an altitude of 7000 ft., Aug. 10, 1896, Flodman no. 467; also near Helena in 1895, Rydberg, no. 2652.

RANUNCULUS SABINI R. Br. in Parry's 1st Voy. App. 264.

Specimens collected near the snow on Long Baldy, altitude 8000 ft. in the Little Belt Mountains, agree fully with the description of R. Brown's species. It is not to be referred to *R. pyg-*

maeus, neither does Brown's description, especially that of the flower, agree with that species. Flodman, no. 469.

RANUNCULUS SUKSDORFII Gray, Proc. Am. Acad. 21: 371.

The range of this species is much extended eastward by its discovery on the Spanish Peaks at an altitude of 8000 ft., July 14, 1896, Flodman, no. 471.

RANUNCULUS SUBAFFINIS (Gray).

R. Arizonicus subaffinis Gray, Proc. Am. Acad. 21: 370. 1886.

R. subsagittatus subaffinis Greene, Pittonia, 2: 110. 1890.

The author agrees fully with Prof. Greene that both the varieties of *R. Arizonicus* ought to be removed from that species, but is inclined to believe that *subaffinis* is specifically distinct from *subsagittatus*. I have seen Prof. Greene's specimens from the San Francisco Mountains, as well as others collected by Dr. Mearns and by Mr. Wooton in the same region; Flodman's no. 472, from the Bridger Mountains, July 28, 1896, agrees in every respect with them.

CARDAMINE UNIJUGA n. sp.

Stem from a very slender rootstock, slender, glabrous, simple, strict, 2–3 dm. high; basal leaves simple, about ½ cm. in diameter, broadly cordate or reniform in outline, round-sinuately 3-lobed; lower stem leaves with a pair of oblong leaflets below the terminal one, which resembles the basal leaves or is a little more rhomboid in outline; upper leaves similar but with all the leaflets oblong; raceme slender and narrow; flowers about 2 mm. in length, white; sepals ovate, obtuse; fruiting pedicels about 1 dm. long, nearly erect; silique erect, 15–18 mm. long and about 1 mm. wide, with a short thick style and 8–12 seeds. (Plate 304.)

The inflorescence and the silique much resemble those of *C. oligosperma*, but the plant is more slender and simple and the leaves in all specimens seen have only one pair of leaflets and the basal ones are simple, while in *C. oligosperma* the basal and lower stem leaves have 3–5 pairs. Spanish Basin, July 18, 1896, Flodman, no. 494.

CARDAMINE LEIBERGII Holz. Cont. U. S. Nat. Herb. 3: 212. 1895.

This species was rediscovered by myself in 1895, but only a few specimens were preserved. It was growing in cañons at two widely separated stations, viz., near Lima, in Beaverhead County, no. 2663, and in Bozeman Cañon in Gallatin County, no. 2664. It resembles a depauperate *C. Breweri*, but differs in the much thicker and more angular toothed leaves. The latter species is very common in Montana.

LESQUERELLA ALPINA (Nutt.) Wats. Proc. Am. Acad. 23: 254 1888.

Vesicaria alpina Nutt; T. & G. Fl. N. Am. 1: 102. 1838.

The true *L. alpina* has been found by me at the following stations: Lima, no. 2666; Melrose, no. 2667, both in 1895. Most of the specimens named *L. alpina* in the herbaria belong to *L. spathulata* Rydberg.

DRABA DENSIFOLIA Nutt.; Torr. & Gray, Fl. N. Am. 1: 104. 1838.

D. glacialis var. *pectinata* Wats. Proc. Am. Acad. 23: 260.

It is very doubtful if this is a variety of *D. glacialis*. The more tufted habit, the more flattened, more hairy and few- (4–6) seeded pod may well give it the rank of a species. Under all circumstances, the name *densifolia* is much older than Watson's name and should not be suppressed. Mr. Flodman's specimens from the Little Elk Mountains, Aug. 10, 1895, no. 499, are nearly identical with Nuttall's type in the Torrey herbarium. It was also collected by the author at Silver Bow in 1895, no. 2669.

DRABA OLIGOSPERMA Hook. Fl. Bor. Am. 1: 51. 1830.

This has been merged into *D. glacialis*, and yet has still more right to a specific rank. It has a very slender flowering and fruiting stem, much smaller leaves, and a pod that is not half the size and with only 2–4 seeds. It was collected growing with the preceding. Flodman, no. 488. Also collected by the author on a mountain near Lima in 1895, no. 2668.

THEROFON HEUCHERAEFORME.

Saxifraga Jamesii Hook. Fl. Bor. Am. 1: 47. 1833. Not Torr.

Caespitose with a thick scaly caudex, glandular-hirsute, 1–2 dm. high; basal leaves round-reniform, deeply and often doubly crenate, on petioles about ½ dm. long; raceme simple or somewhat compound; calyx campanulate or turbinate, tinged with purple; sepals ovate, erect; petals obovate-oblanceolate or oblongspatulate, dark violet, about equalling the sepals; stamens 10; styles free. (Plate 305, fig. 3.)

This has generally been confused with *T. Jamesii*, which it much resembles in habit. The main characters that distinguish the two are: in *T. heucheraeforme* the petals are dark bluish violet, scarcely exceeding the sepals and comparatively narrow, and the styles free (see plate 305, fig. 3); in *T. Jamesii* the petals are reddish purple, orbicular on a long claw, and often twice as long as the sepals, and the styles are united to near the top (see fig. 4). Both have 10 stamens, and differ in that respect as well as in habit from the other species of *Therofon.* In habit they much more resemble *Heuchera.* They may constitute a fairly good genus; but the arctic *T. Richardsonii* seems to connect them with the other species with 5 stamens, small white flowers and diffuse panicles.

T. heucheraeforme extends from the Black Hills of South Dakota to the Teton range of Wyoming and northward. The following specimens from Montana have been seen: Flodman, no. 514, July 28, 1896, from Bridger Mountains; P. A. Rydberg, no. 2677, July 23, 1895, from Bozeman Cañon; Frank Tweedy, no. 255, 1887, from East Boulder. *T. Jamesii* (Torr.) Wheelock, is as far as I know, confined to the alpine peaks of Colorado.

MITELLA VIOLACEA n. sp.

Stem from a perennial rootstock, slender, about 3 dm. high, leafless, finely puberulent and with a few long silky hairs. Basal leaves on petioles 5–10 cm. long, the blade and petiole sparingly hispid, broadly cordate in outline, slightly 5–7-lobed with rounded finely crenate lobes; raceme very short with small nearly sessile flowers; flowers about 2 mm. in diameter; sepals ovate, rather obtuse, very thin and petal-like, veined and tinged with violet; petals oblanceolate, entire or slightly 3-cleft, a little exceeding the sepals (Plate 305, figs. 1–2).

In the form of the flower this stands nearest to *M. diversifolia* Greene. The sepals and petals are of the same size and form, but the former are generally tinged with violet and the latter less deeply 3-toothed, or entire. The leaves are broader and rounder in outline, the lobes shallower and rounder and evidently crenate. In other words the leaves are almost identical with those of *M. pentandra* Hook., from which the plant is easily distinguished by the small, nearly sessile flowers and the form of the petals. With

M. trifida, which also has 3-cleft petals, it can scarcely be confused, as that species has reniform leaves, larger flowers, and the segments of the petals are filiform.

Type: J. H. Flodman, no. 527, Spanish Basin in the Madison Range, Montana, July, 11, 1896, altitude 6000 ft.

POTENTILLA CANDIDA Rydberg, Bull. Torr. Club, **24**: 6. 1896.

A few specimens of this species were collected by me in 1895, at Deer Lodge, no. 2688, and at Lima, no. 2687.

POTENTILLA CONVALLARIA n. sp.

Stem tall, erect, 4–10 dm. high, long-villous but not very dyensel so, glandular or viscid, especially above, branched above with long erect branches. Stipules ovate or lanceolate, more or less toothed, about 1 cm. long; basal leaves several, with villous petioles 5–10 cm. long, pinnate of 4–5 pairs, glabrate or slightly pubescent; leaflets 2–5 cm. long, broadly obovate and obtuse, coarsely serrate and incised with ovate teeth; stem leaves with fewer more acutish leaflets; cyme with rather elongated upright branches, but with short pedicels, and therefore rather elongated and narrow; flowers 10–18 mm. in diameter; calyx densely glandular-viscid, villous, not much enlarged in fruit, 8–10 mm. in diameter; petals broadly obovate, white, in drying turning yellow, a little longer than the sepals; bractlets lanceolate, much smaller than the ovate-lanceolate sepals; stamens about 25, anthers flat, slightly cordate at the base. (Plate 306.)

This species resembles *P. arguta*, but is more slender. The branches of the cyme are rather elongated, the calyx smaller, the stamens fewer and the leaflets rounder and nearly glabrous. The leaves most resemble those of *P. glutinosa*, from which the plant differs mostly in its smaller and white petals and in the narrow cyme. It has been labelled *Potentilla arguta* whenever collected. It is apparently a rather rare plant, representing that species in the valleys of the northern Rockies. The following specimens have been examined:

Montana: Rydberg and J. H. Flodman, no. 602, in the Elk Mountains; no. 603 in the Spanish Basin; no. 604 (type) near Bozeman; no. 605 in the Bridger Mountains, all in 1896. F. L. Scribner, no. 42, 1883.

Washington: Wilkes Exp. no. 817; C. V. Piper, no. 1528.

Assiniboia: J. Macoun, no. 41, 1880. (?)

Idaho: A. A. & Gertrude Heller, no. 3230, 1896.

Wyoming: T. H. Burglehaus, 1894; E. Stevenson, no. 72, 1894.

Alberta (*?*): Macoun, no. 623, 1885 (Kananaskis).

POTENTILLA PSEUDORUPESTRIS n. sp.

(?) *Potentilla rupestris* Presl, Epim. Bot. 198. 1849. Not L.

Potentilla glandulosa Nevadensis Wats. Bot. Cal. 1: 178. In part. 1876. Not *P. Nevadensis* Boiss.

Stem erect, slender, striate, 2–5 dm. high, branched, with slender ascending branches, sparingly glandular-villous. Stipules ovate, more or less toothed. Basal leaves several on rather short petioles, pinnate with 3–4 pairs, sparingly and finely pubescent or glabrate; terminal leaflet obovate-cuneate-flabelliform, the lateral ones obliquely elliptical or nearly orbicular, all coarsely serrate and incised with ovate mucronulate teeth; stem leaves generally few, 2-paired or ternate with more rhomboid leaflets; cyme open, with ascending branches and slender pedicels; flowers 15–20 mm. in diameter; calyx more or less glandular-viscid, villous, in fruit not much enlarged, 8–10 mm. in diameter; petals white, drying yellowish, broadly obovate, exceeding the sepals by ⅓; bractlets oblong or lanceolate, much shorter than the ovate lanceolate pointed sepals; stamens about 25; anthers flat, a little cordate at the base. (Plate 307.)

This species is exceedingly similar to the European *P. rupestris*, from which it differs only in the smoother leaves and the longer pubescence of the stem. It differs from the other white-flowered American species in the open cyme, the slender pedicels and the larger petals, which nearly equal in size those of *fissa* and *glutinosa*. It grows in the mountains at an altitude of 2000 to 3000 m. The form growing at lower elevations is more leafy, with larger and glabrate leaflets and less viscid stem; this I took for *P. lactea* Greene, but Professor Greene has assured me that it is not that plant. In alpine regions it is more glandular viscid and with smaller leaflets. The following specimens have been examined:

Montana: Rydberg and J. H. Flodman, Long Baldy, Little Belt Mountains, no. 598 (type); Yogo Baldy, no. 499: Spanish Basin, nos. 597 and 600; Little Belt Mountains, no. 601 (altitudes, 6–8000 feet); R. S. Williams, no. 754, 1888.

Idaho: B. W. Evermann, no. 363, 1895; J. H. Sandberg, no. 164, 1888; J. B. Leiberg, 1890.

California: W. H. Brewer, no. 1714, 1863; Kellogg & Harford, no. 211, 1868–9.

Washington: W. H. Suksdorf, 1885.

Yellowstone National Park: T. H. Burglehaus, 1893.

Rocky Mountains of British America: Dawson, nos. 7471, 7870, 18734, 1430, 1881; J. Macoun, no. 10474, 1895.

SPIRAEA DENSIFLORA Nutt.; T. & G. Fl. N. Am. **1**: 414. 1840. Under *S. betulaefolia.*

S. chamaedrifolia β Hook. & Arn. Bot. Beechy, 123. 1841.

S. betulaefolia rosea in herb., not Gray.

This seems to be well distinct from *S. lucida*, which is common in the same region. The latter grows mostly in open places, while *S. densiflora* is found only in the deeper woods. Bridger Mountains, Flodman, no. 543, and Little Belt Mountains, no. 544. The following specimens also are in the Columbia Herbarium: Nuttall (type) Rocky Mountains of Columbia; Beechey's Voyage, Kotzebue's Sound; J. M. Macoun, British Columbia, 1890.

HEDYSARUM SULPHURESCENS.

H. flavescens Coulter & Fisher, Bot. Gaz. **18**: 300. 1893. Not Regel & Schmalh.

This was collected by J. H. Flodman in 1896 in the Spanish Basin, no. 650, and in the Bridger Mountains, no. 651, and by the author in 1895 near Bozeman, no. 2720.

TRIFOLIUM HAYDENII Porter in Hayden's Surv. **1871**: 480. 1871.

This was referred to *T. Kingii* by Watson, but has nothing to do with it. It is rather common in certain localities of central and southwestern Montana. Flodman, no. 623, from the Bridger Mountains, and no. 624, from the Spanish Peaks; Frank Tweedy, Park Co., Montana, 1887, and in the Yellowstone Nat. Park, 1884. Also collected by the author and T. A. Williams in the Spanish Basin.

VACCINIUM MICROPHYLLUM (Hook.)

V. Myrtillus var. *microphyllum* Hook. Fl. Bor. Am. **2**: 33. 1834.

In my opinion this is just as good a species as any, differing from

V. Myrtillus in the bright green branches, the small leaves, which are more pointed and scarcely half the size of those of that species, in the smaller nearly sessile flowers and the small bright red berries, which become dark purple only when fully ripe, never bluish black as in *V. Myrtillus.* It is common in Montana and was collected by Flodman in the Spanish Basin, no. 712.

GENTIANA CALYCOSA MONTICOLA.

G. calycosa stricta Griseb. Gen. & Sp. Gent. 292. 1839. Not *G. stricta* Willd., nor Klotzsch.

This beautiful little gentian was collected on the top of Yogo Baldy in the Little Belt Mountains, Aug. 24, 1896, Flodman, no. 726.

POLEMONIUM VISCOSUM Nutt. Journ. Acad. Phil. (II.) 1: 154. 1847. Not Gray.

In describing *P. viscosum,* Gray* states that it has rounded calyx-lobes, and gives as reference: Pl. Gamb. 154 mainly, excluding what relates to the "elongated lanceolate segments of the calyx." The *Plantae Gambellii* were published in the Journal above cited. Nuttall describes there the calyx-segments as being elongated lanceolate, both in the Latin description and in the general notes written in English. In order to settle the matter I have written to the Curator of the Philadelphia Academy of Sciences, Mr. Stewardson Brown, who has kindly loaned me Nuttall's type. This is not a very good specimen, is past blooming, but it is satisfactory for my purpose. It shows that the inflorescence was subcapitate or subspicate and that the calyx-segments were elongated lanceolate. On the same sheet as Nuttall's type there is another specimen collected by T. S. Brandegee in the state of Washington; under the two specimens is penciled in the handwriting of the late Mr. Redfield the following remarks: "These all seem quite different from *P. confertum* in the flowers and mode of flowering. Yet I cannot fit them to Gray's description of what he regards as Nuttall's *P. viscosum.*"

From the more complete material I have at hand, viz.: specimens collected by J. H. Flodman, no. 742, August 19, 1896, on

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* Syn. Fl. 2: part 1, 150.

the top of Long Baldy, Little Belt Mountains, and by Frank Tweedy, 1887, in Park County, Montana, I can easily see that *P. viscosum* Nutt. is a near relative to *P. confertum* Gray. It has the same general habit and inflorescence. The corolla is, however, shorter, more open-funnelform and dark blue and the segments of the leaves are much smaller and rounder. The plant is very strong scented.

What Dr. Gray regarded as *P. viscosum*, I think I know, as there is a specimen in the Torrey herbarium, received from Dr. Gray and labelled in his handwriting. This specimen agrees also fully with Dr. Gray's description. It should be known under the name

POLEMONIUM PARVIFOLIUM Nutt. mss.

P. Mexicanum Nutt. Journ. Acad. Phil. 7: 41. 1834. Not Cerv.

P. viscosum Gray, Proc. Am. Acad. 7: 280. Not Nutt.

I have also examined Nuttall's type of *P. Mexicanum* collected by Wyeth, on the Flathead River. It differs from Gray's *P. viscosum* in no respect except that the calyx-lobes are a little longer. Nuttall himself has changed the name on the label to *parvifolium* probably because he had found that the name *P. Mexicanum* had been used before. That Gray had seen this specimen can be seen from a postal card from him, pasted on the same sheet, dated January 6, 1880, and on this, he states that he regarded it as being near *P. pumilum* var. *pulchellum*, and adds: "If I had to do it over, I would add a var. *parvifolium* to it." As *P. Mexicanum* and *P. parvifolium* are both based on the same specimens it is strange to find that Dr. Gray in 1886,* makes the following remark under *P. foliosissimum*. "To this probably belongs *P. Mexicanum* Nutt. Journ. Acad. Philad. 7 : 41, from the northern Rocky Mountains." It is evident that the Nuttallian specimens of *P. Mexicanum* both in the Philadelphia and the Torrey herbaria belong to the same species as Gray's *P. viscosum*, which is a very near relative of *P. pulchellum*, at least as that species is understood in America, differing mainly in the smaller flowers. Flodman, Spanish Basin, nos. 739 and 740. 1896.

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*Syn. Fl. 2: part 1, Suppl. 412.